



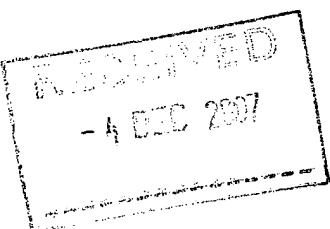
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Date

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Reference 312267EP/PDJ	Application No./Patent No. 04814692.2 - 2222 PCT/US2004042543
Applicant/Proprietor MacDermid Printing Solutions, LLC	

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the supplementary European search report under Article 157(2)(a) EPC for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

- Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

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Refund of the search fee

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.





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X	EP 0 197 601 A (STORK SCREENS BV [NL]) 15 October 1986 (1986-10-15) * claims 1-4; example 1 * -----	1, 3, 6, 8, 16, 20, 26	INV. G03F7/095 G03F7/24 G03F7/40
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A	-----	1-15, 17-26	
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Y	JP 63 077050 A (NIPPON TELEGRAPH & TELEPHONE) 7 April 1988 (1988-04-07) * abstract *	1, 3, 6, 8, 16, 20, 26	G03F
The supplementary search report has been based on the last set of claims valid and available at the start of the search.			
1	Place of search Munich	Date of completion of the search 20 November 2007	Examiner Thiele, Norbert
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 81 4692

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-11-2007

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PUBLICATION NUMBER : 63077050
 PUBLICATION DATE : 07-04-88

APPLICATION DATE : 20-09-86
 APPLICATION NUMBER : 61222718

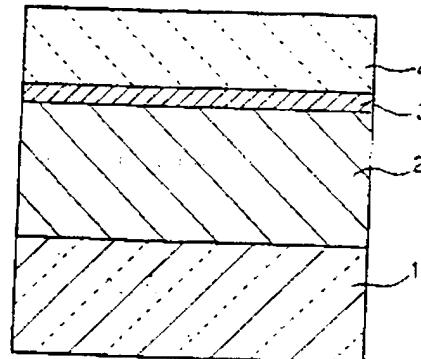
APPLICANT : NIPPON TELEGR & TELEPH CORP
 <NTT>;

INVENTOR : IKITSU HIDEO;

INT.CL. : G03C 1/00 G03F 7/00 H01L 21/30

TITLE : INTERLAYER MATERIAL FOR
 THREE-LAYER RESIST AND PATTERN
 FORMING METHOD

$(R_1SiO_{2/3})_m \cdot (R_2SiO)_n \cdot (RSiO_{2/3})_p \cdot (SiO_2)_q$
 (式中、Rは、同一もしくは異っていてもよく、炭化水素基、水素、水酸基、アルコキシ基からなる群から選ばれる一種であり、 $m+n+p+q=1$ 、 $m>0$ 、 n 、 p 、 $q \geq 0$ である)



ABSTRACT : PURPOSE: To form an upper layer resist film uniform in film thickness by forming an interlayer composed essentially of specified organopolysiloxane and incorporating an organic peroxide as a cross-linking agent to form a 3-layer resist.

CONSTITUTION: The interlayer of the 3-layer resist is composed essentially of organopolysiloxane represented by the formula shown on the right in which each of R is optionally same or different, and each is H, OH, alkoxy, or a hydrocarbon group; $m+n+p+q=1$, $m>0$, n , p , $q \geq 0$, $m/q \leq 1$ ($q>0$), $m/p \leq 0.3$ ($p>0$), and p and q are simultaneously not 0. Further, the cross-linking agent containing the organic peroxide is incorporated in the interlayer. A substrate pattern is formed by using the 3-layer resist as follows: Spin coating the semiconductor substrate 1 with a lower layer resist 2 made of an organic polymer, then heat treating it, spin coating the lower layer 2 with the interlayer material 3 composed of the organopolysiloxane containing a prescribed amount of organic peroxide, heat treating it, spin coating the interlayer 3 with an upper layer resist 4 made of a polymer to be cross-linked or decomposed by radiation, and finally heat treating it, thus permitting the good upper layer resist 4 uniform in thickness to be formed by using this interlayer.

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$(R_1SiO_{1/2})_m \cdot (R_2SiO)_n \cdot (RSiO_{1/2})_p \cdot (SiO_2)_q$

(式中、Rは、同一もしくは異っていてもよ
く、炭化水素基、水素、水酸基、アルコキ
シ基からなる群から選ばれる一種であり、
 $m + n + p + q = 1$ 、 $m > 0$ 、 n 、 p 、 q
 ≥ 0 である)

APPLICATION DATE : 20-09-86

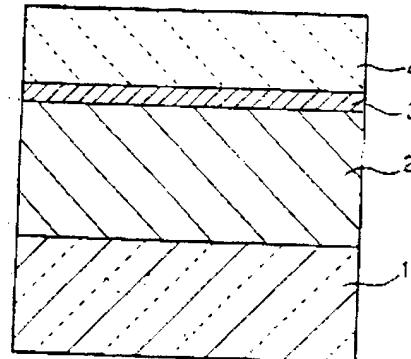
APPLICATION NUMBER : 61222718

APPLICANT : NIPPON TELEGR & TELEPH CORP
<NTT>;

INVENTOR : IKITSU HIDEO;

INT.CL. : G03C 1/00 G03F 7/00 H01L 21/30

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THREE-LAYER RESIST AND PATTERN
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